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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,891	09/24/2003	Paul Kenneth Houpt	130504	5966

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GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER
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ARTHUR JEANGLAUDE, GERTRUDE

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/670,891

Applicant(s)

HOUP ET AL.

Examiner

Gertrude Arthur-Jeanglaude

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>92403</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Claims 1-28 are presented for examination.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 8-10, 15-17, 22-24, are rejected under 35 U.S.C. 102(b) as being anticipated by Nickles et al. (WO 99/14093).

As to claims 1, 15, Nickles et al. disclose an apparatus for controlling a railway consist, the apparatus comprising a consist model adapted (See Fig. 2) for computing an objective function from a set of candidate driving plans and a set of model parameters (considered as track profile, location, destination; see abstract; col. 20, lines 1-4). Nickles et al. disclose a parameter identifier adapted for calculating the model parameters from a set of consist measurements (such as gluttony, excessive speed warning, minimum safe pneumatic brake reduction; see page 16, lines 3-25); and a trajectory optimizer adapted for generating the candidate driving plans and for selecting an optimal driving plan to optimize the objective function subject to a set of terminal constraints and operating constraints (See page 3, lines 17-32).

As to claims 2, 10, 16, 24, Nickles et al. disclose a pacing control system adapted for generating a set of throttle commands from the optimal driving plan and the consist measurements (See page 20, lines 12-16).

As to claim 3, Nickles et al. disclose a display module adapted for displaying a formatted driving plan from the optimal driving plan and the consist measurements (See page 20, lines 1-4).

As to claims 8, 22, Nickles et al. disclose the objective function is a quantity or linear combination of quantities selected from the group consisting of fuel consumption, travel time, integral squared input rate, and summed squared input difference (see page 3, lines 17-25).

As to claims 9, 23, Nickles et al. disclose an apparatus for controlling a railway consist, the apparatus comprising a consist model adapted (See Fig. 2) for computing an objective function from a set of candidate driving plans and a set of model parameters (considered as track profile, location, destination; see abstract; col. 20, lines 1-4). Nickles et al. disclose a parameter identifier adapted for calculating the model parameters from a set of consist measurements (such as gluttony, excessive speed warning, minimum safe pneumatic brake reduction; see page 16, lines 3-25); and a trajectory optimizer adapted for generating the candidate driving plans and for selecting an optimal driving plan to optimize the objective function subject to a set of terminal constraints and operating constraints (See page 3, lines 17-32); a display module adapted for displaying a formatted driving plan from the optimal driving plan and the consist measurements (See page 4, lines 20-22); and the objective function being a quantity or linear combination of quantities selected from the group consisting of fuel consumption, travel time, integral squared input rate, and summed squared input difference (See page 3, lines 17-25).

As to claim 17, Nickles et al. disclose displaying a formatted driving plan from the optimal driving plan and the consist measurement (See page 4, lines 20-22).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-5, 11-12, 18, 25-26, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nickles et al. in view of Breed (U.S. Pub 20030191568).

As to claims 4-5, 11-12, 18, 25-26, Nickles et al. disclose all but fail to specifically disclose the parameter identifier comprises an extended Kalman filter; and the extended Kalman filter has an extended filter state vector comprising a consist position estimate, a consist speed estimate, and the model parameters; and the consist measurements comprises a consist position measurement and a consist speed measurement. In an analogous art, Breed discloses a method and system for controlling a vehicle wherein it discloses a Kalman filter; a consist position measurement and a consist speed measurement (See abstract; paragraph 0386). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nickles et al. with that of Breed by having a kalman filter and a consist position measurement and a consist speed measurement in order control movement of the vehicle.

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Claims 6-7, 13-14, 19-21, 27-28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nickles et al. in view of Meyer (U.S. Pat 6,641,090).

As to claims 6-7, 13-14, 19-21, 27-28, Nickles et al. disclose all but fail to specifically disclose the parameter identifier comprises an extended Kalman filter; and the extended Kalman filter has a filter state vector comprising a consist position estimate, a consist speed estimate, and the model parameters; and the consist measurements comprises a consist position measurement and a consist speed measurement.; and a least squares estimator adapted for estimating the model parameters from the model parameters from the filter output and consist measurements. In an analogous art, Meyer discloses a train location system and method that utilizes inertial measurement wherein it discloses Kalman filter has a filter state vector comprising a consist position estimate, a consist speed estimate, and the model parameters; and the consist measurements comprises a consist position measurement and a consist speed measurement.; and a least squares estimator adapted for estimating the model parameters from the model parameters from the filter output and consist measurements (See col. 3, lines 1-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Nickles et al. with that of Meyer by having a kalman filter and a consist position measurement and a consist speed measurement in order to provide desired information outputs.

### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gertrude Arthur-Jeanglaude whose telephone number is (571) 272-6954. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GAJ



September 13, 2005



GERTRUDE A. JEANGLAUE  
PRIMARY EXAMINER